THE EFFECTS OF ACUTE DIETARY NITRATE SUPPLEMENTATION ON MAXIMAL EXERCISE PERFORMANCE

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Abstract

The evidence suggests that dietary nitrate in the form of beet juice can be used to improve aerobic performance during maximal aerobic exercise. The purpose of this experiment is to determine if dietary nitrate improves aerobic exercise performance.

Methods (cont’d)

Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Max</th>
<th>Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (m)</td>
<td>1.66</td>
<td>0.12</td>
<td>1.80</td>
<td>1.52</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>63.96</td>
<td>19.03</td>
<td>95.25</td>
<td>46.72</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>22.68</td>
<td>3.88</td>
<td>29.3</td>
<td>19.5</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>21</td>
<td>1</td>
<td>22</td>
<td>20</td>
</tr>
</tbody>
</table>

Results (cont’d)

- As seen in Figure 1, there was no significant difference (p>0.05) in VO_{2max} between the placebo and beet juice group.
- As seen in Figure 2, there was no significant difference (p>0.05) in time until exhaustion between the placebo and beet juice group.
- As seen in Figure 3, there was no significant difference (p>0.05) in RPE between the placebo and beet juice group.
- As seen in Figure 4, there was a significant difference (p=0.035) in maximal heart rate between the placebo and beet juice group.
- The heart rate decreased from an average of 196.8 ±10.84 bpm with the placebo to 193.6 ±11.19 bpm following acute dietary nitrate supplementation.

Conclusions

- The results of this study indicate that following acute dietary nitrate supplementation with beet juice there is a decrease in maximal heart rate while aerobic performance is maintained.
- It has been suggested that nitrite could be acting in place of O_2 as the final electron acceptor in the respiratory chain, thereby reducing the requirement for O_2 consumption.
- This results in an increase in mechanical efficiency.
- The decreased heart rate that was found in the present study could be a result of this increased mechanical efficiency.